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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,010	01/31/2002	Seyed R. Zarabadi	DP-306551	5543

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EXAMINER

HANLEY, JOHN C

ART UNIT PAPER NUMBER

2856

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/059,010

Applicant(s)

ZARABADI ET AL.

Examiner

John C Hanley

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2856

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-3, 5-10 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The description of the capacitive plates as being radially extended is not supported by the specification or drawings. The plates are depicted as all being parallel to one another. Therefore, they do not all extend along a "radially" as claimed. The examiner interprets radial extension as being that depicted in, for example, figure 7 of patent no. 6,508,124 to Zerbini et al.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3 and 5-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 1, radially extended is unclear whether it means the plates are aligned along a radius, or if the plates are positioned at distance radially displaced from some undefined reference. The examiner will use the latter of these interpretations in the following rejection(s). Further, the inertial

Art Unit: 2856

mass is recited as including a plurality of movable capacitive plates in claim 1, which does not provide proper or clear antecedent basis for the inertial masses recited in claims 2 and 3. If the inertial mass includes the plates, it is not elliptical shaped as recited in claim 3. If the mass does not include the plates, it is not substantially annular as recited in claim 2. Regarding claim 11, positive-to-negative with respect to the sensing axis is unclear. The specification does not further enlighten. It is not clear whether applicant intends positive-to-negative to be an electrical or mechanical limitation. Further, it is not clear how positive-to-negative relates to the sensing axis. The examiner will interpret this meaning as merely being opposite directions in the following.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of

Art Unit: 2856

the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1, 5-9, 11-15 and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Zerbini et al (US 6,508,124).

7. Zerbini et al shows, in Figure 13, a linear MEMS_type accelerometer having a collective inertial mass 71 that carries movable plates 75, four tether support arms 72 flexible in the sensing axis but rigid in non sensing axis, the tethers being connected to central member 83 via rigid members 73, and fixed plates 76 capacitively coupled to the movable plates and inherently fixed to a substrate. The plates extend in opposite "positive/negative" directions with respect to the sensing axis, and the plates extend "radially" from the outer periphery of the inertial mass. Four banks of capacitor plates are provided. Although not specifically mentioned with respect to Figure 13, Figure 13 is said to have similar construction as other Figures, so it would inherently include the silicon substrate 51 and cavity 60 of, for example, Figure 11. Input and output means are fundamentally inherent to the device for sensing the capacitance between the plates.

8. Claims 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Yokota et al (US 5,707,077).

9. Yokota et al shows an acceleration sensor having an inertial mass 5 that rings a central support 9 that projects from a silicon substrate 1. A plurality of support arms 10 support the ring 5 above a cavity. In Figure 10, a plurality of fixed capacitor plates is mounted on the substrate at the periphery of the ring, as opposed to the center of the ring. Areas of the ring adjacent to the plates 7 effectively form a plurality of movable plates capacitively coupled to the fixed plates. Input and outputs 8 are provided. The support arms extend perpendicular to the sensing axis.

Art Unit: 2856

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2, 3, 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zerbini et al as applied to Claims 1, 5-9, 11-15 and 17-19. Zerbini et al lacks the specific shapes recited for the inertial mass. Zerbini et al also lacks a specific teaching of a trench etching manufacturing process. As set forth in the prior office action, the overall shape of the inertial mass in Claims 2 and 3 does not appear to add any unexpected result or operational feature that would patentably distinguish over any other shape, so long as the capacitive coupling function between the movable and fixed plates is maintained. Therefore, it would have been obvious to one skilled in the art to provide any shape for the inertial mass, so long as the capacitive relationship between the plates is maintained. Regarding Claims 10 and 16, the manner in which the structure is formed is not given any weight to the structural limitations of the apparatus claimed. However, etching would have been an obvious manner of making a silicon MEMS structure to anyone skilled in the art of semiconductor or silicon substrate fabrication.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota et al, as applied to Claim 20. Yokota et al lacks a specific teaching of a rigid member extending between the central member and support arms, and

Art Unit: 2856

the manner of making the arm. However, it would have been obvious to one skilled in the art at the time of applicants invention that the beams 10 of Yokota et al could be partly flexible and partly rigid as a rigid extension of the central post 9, depending upon where the central post is defined to end and the arm begin. In other words, the central post, instead of being rectangular, could obviously be, for example, shaped like a cross instead of a solid rectangle, the cross arms extending from the central post and meeting the support arms. This amounts to an equally functional support arm function with a mere difference in shape that would not offer unexpected results or function. The manner of making the arms is not given any weight in the apparatus made. However, etching to create a shape in a silicon MEMS type device would have been clearly obvious methodology to one skilled in the art of such fabrication.

13. Applicant's arguments have been read and considered, but are moot in view of the new grounds of rejection. It is noted, however, that applicant's arguments regarding radial extension of plates do not appear to be met by the specification, as indicated above; and applicant's characterization of Yokota et al as being only an angular sensor does not recognize that it is a 3D sensor capable of linear sensing. Further, the examiner is not persuaded by the argument that the mass 9 of Yokota et al is not a ring.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C Hanley whose telephone number is 703-305-5130. The examiner can normally be reached on M-F 9AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 703-306-4705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application/Control Number: 10/059,010

Page 7

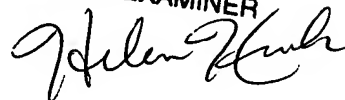
Art Unit: 2856

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCH

A handwritten signature, possibly reading 'JCH', in cursive script.

HELEN KWOK
PRIMARY EXAMINER

A handwritten signature of Helen Kwok in cursive script.